



UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

09/068,592 05/14/98 MORITA

K XIP5934USO

000881  
LARSON & TAYLOR, PLC  
1199 NORTH FAIRFAX STREET  
SUITE 900  
ALEXANDRIA VA 22314

IM52/0515

EXAMINER

DOVE, T	
ART UNIT	PAPER NUMBER

21

1745

DATE MAILED:

05/15/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.

09/068,592

Applicant(s)

Morita et al.

Examiner

Tracy Dove

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 Mar 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1, 3-7, 9-12, 23, 27, 38, 39, and 41-43 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-7, 9-12, 23, 27, 38, 39, and 41-43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☒ All b) ☐ Some\* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_
- 18) ☒ Interview Summary (PTO-413) Paper No(s). 21
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

Art Unit: 1745

### **DETAILED ACTION**

This Office Action is in response to the communication filed on 3/20/01.

#### ***Response to Amendment***

After further consideration of the prior art, claims 1, 3-6, 23, 27 and 38 are not directed toward allowable subject matter. The subject claims were indicated as allowable in the Advisory Action of 3/27/01 because the subject matter of cancelled claim 40 was incorporated into claim 1. However, after further review, the claims are anticipated by Miyabayashi et al., 5,401,598. The subject matter of claim 40 was not previously rejected in view of the prior art. Therefore, the finality of the Office Action of 12/1/01 is withdrawn.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

Art Unit: 1745

such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-7, 9-12, 23, 38, 39 and 41-43 are rejected under 35 U.S.C. 102(b)/103(a) as being anticipated by, and alternatively unpatentable over, Miyabayashi et al., US 5,401,598.

Miyabayashi teaches an electrode for a secondary battery including a carbonaceous material. The carbonaceous material has a multiphasic structure comprising a nucleus and a surface layer (coat-forming carbon) around the nucleus (core carbon). See abstract. Figure 1 shows a nearly spherical carbonaceous material. The carbonaceous material has a specific surface area measured by the BET method of 1-100 m<sup>2</sup>/g, most preferably 2-8 m<sup>2</sup>/g. See col. 6, lin 30-35. As to the ratio of the nucleus portion and the surface layer portion, that of the nucleus is preferably 20-99% by weight, particularly preferably 50-85% by weight, and that of the surface layer is preferably 1-80% by weight, most preferably 15-40% by weight. See col. 9, lin 45-55. See also col. 10, lin 18-24. Example 4 (col. 17, lin 1-5) teaches a ratio of carbonaceous material which was a surface layer was 40 parts by weight based on 100 parts by weight of the carbonaceous material which became a nucleus ( $40/100+40=0.286$ ). The carbon material forming the nucleus may be graphite. See col. 8, lin 7-13. The carbonaceous material used in Miyabayashi has at least two peaks of diffraction lines corresponding to the multi-phasic structure, that is, as the peak of the diffraction line corresponding to the crystalline structure. The surface layer portion has a spacing  $d_{002}$  of a (002) plane of 3.45 Å or more and a crystallite size in the c-axis direction ( $L_c$ ) of less than 150 Å. The peak of diffraction line corresponding to the

Art Unit: 1745

structure of the nucleus portion has a  $d_{002}$  of less than  $3.45 \text{ \AA}$  and an Lc of  $150 \text{ \AA}$  or more. See col. 4, lin 8-31. The carbonaceous material has a true density of  $1.80 \text{ g/cm}^3$  or more, and may have any desired shape. The volume average particle size is preferably  $200 \text{ \mu m}$  or less, most preferably  $2\text{-}20 \text{ \mu m}$ . See col. 6, lin 18-29 and abstract. The thermal decomposition (calcination) temperature for forming a surface layer is generally lower than the temperature for synthesizing the carbonaceous material which becomes a nucleus, preferably  $300\text{-}2000^\circ\text{C}$ . See col. 9, lin 17-20.

The carbonaceous material of Miyabayashi can be formed by heating the material at a temperature of  $300\text{-}3000^\circ\text{C}$  (decomposing), under an inert gas stream or under vacuum, to carbonize and graphitize the carbon material. Example 1 (col. 14, lin 48-64) teaches thermal decomposition (calcination) is performed to form the surface layer carbonaceous material on the particle of the carbonaceous material (nucleus). The carbonaceous material is heated up to  $900^\circ\text{C}$  at a temperature elevation rate of  $10^\circ\text{C/min}$ .

Thus the claims are anticipated.

The claims are alternatively unpatentable.

Miyabayashi does not explicitly teach washing the carbonaceous material multiphasic structure .

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because irrespective of how the layered carbon materials are made, the products are the same. Thus, whether the layered carbon materials are

Art Unit: 1745

calcined and then washed, washed before they are calcined, or any other method of manufacturing the layered carbon material is used, the layered carbon materials, as an end result, are the same. Furthermore, the courts have held that when similar products are produced, the product-by-process limitations are obvious. In re Brown 173 USPQ 685, In re Fessman 180 USPQ 324.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyabayashi et al., US 5,401,598.

See discussion of Miyabayashi above.

Miyabayashi does not explicitly state the coated carbon material is pretreated for oxidation before calcination of the coated carbon material.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made. Miyabayashi teaches that the surface carbon material and the nucleus carbon material have different degrees of crystallinity. One of skill would have known that the crystallinity of a carbon material is lowered when the carbon material is subjected to an oxidation material (i.e. oxygen in the air). That is why graphitization of carbon materials often occurs under an inert atmosphere. This is well known in the art. Therefore subjecting the coated carbon material to an oxidation treatment before calcination is considered obvious.

Art Unit: 1745

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is (703) 308-8821. The Examiner may normally be reached *Monday-Thursday from 8:00 AM - 6:30 PM*. My supervisor is Gabrielle Brouillette, who can be reached at (703) 308-0756. The Art Unit receptionist can be reached at (703) 308-0661 and the official fax number is (703) 305-3599.

May 10, 2001

  
GABRIELLE BROUILLETTE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700